

ABSTRACT

Apparatus and method for sensing at an anatomic body site and mapping or transforming the sensor signal into various forms of virtual image and feedback signals, having particular application in assisting surgeons and other operators during a medical procedure. In one embodiment, a medical system is provided that includes a medical implement, a manipulator controllable by an operator for control of the medical implement at an anatomic body site and a sensing device for sensing a non-visible field associated with a body structure at the site. A controller, intercoupling the sensing device and the manipulator, includes a mapping component for translating characteristics of the sensed field signal into a tactile feedback signal to the manipulator to warn the surgeon that he is approaching this structure with the implement. Alternatively or in addition, a virtual image of the body structure is displayed, separate or preferably together with a visual image of the site, to assist a surgeon in manipulating a medical implement.

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